CLAIMS

1. An anti-inflammatory compound comprising the structure:

$$X_a\text{-}X_b,$$

wherein X_a is a membrane translocation domain comprising from 6 to 15 amino acid residues; and X_b is a NEMO binding sequence.

2. The anti-inflammatory compound of claim 1, further comprising a modifying group.

3. The anti-inflammatory compound of claim 1, wherein X_b consists of the following structure:

$$(Y)_n\text{-}X_1\text{-}X_2\text{-}X_3\text{-}X_4\text{-}X_5\text{-}X_6\text{-}(A)_m$$

wherein

n and m are each, independently, 0 or 1;

A and Y each comprises from 1 to about 3 amino acid residues;

X_1 is L, A, I or nor-leucine (Nle);

X_2 is D, E, N, Q, homoserine (Hser) or 2-ketopropylalanine (2-ketopropy-A);

X_3 is W, F Y, 4-biphenyl-alanine (Bpa), homophenylalanine (Hphe), 2-Naphthylalanine (2-Nal), 1-Naphthylalanine (1-Nal), or cycloxexyl-alanine (Cha);

X_4 is S, A, E, L, T, nor-leucine (Nle), or homoserine (Hser);

X_5 is W, H, homophenylalanine (Hphe), 2-Naphthylalanine (2-Nal), 1-Naphthylalanine (1-Nal), O-benzyl serine (SeroBn), or 3-Pyridylalanine (3-Pal); and

X_6 is L, A, I, or nor-leucine (Nle).

4. The anti-inflammatory compound of claim 1, wherein n is 1 and Y is the sequence TA.

5. The anti-inflammatory compound of claim 1, wherein m is 1 and A is the sequence QTE.

6. The anti-inflammatory compound of claim 1, wherein X_b is a sequence selected from the group consisting of TALDWSWLQTE; LDWSWLQTE; TALDWSWL; ALDWSWLQTE; LDWSWLQTE; LDWSWL; TALDWSWLQT; TALDWSWLQ; ALDWSWLQT; LDWSWLQ; LDWSWLQT; ADWSWL; LDWSWA; ADWSWA; LDFSWL; LDYSWL; LDWAWL; LDWEWL;

TAADWSWLQTE; ADWSWLQTE; TAADWSWL; AADWSWLQTE; ADWSWLQTE; ADWSWL; TAADWSWLQT; TAADWSWLQ; AADWSWLQT; ADWSWLQ; ADWSWLQT; ALDWSWAQTE; LDWSWAQTE; TALDWSWA; ALDWSWAQTE; LDWSWAQTE; LDWSWA; TALDWSWAQT; TALDWSWAQ; ALDWSWAQT; LDWSWAQ; LDWSWAQT; TAADWSWAQTE; ADWSWAQTE; TAADWSWA; AADWSWAQTE; ADWSWAQTE; ADWSWA; TAADWSWAQT; TAADWSWAQ; AADWSWAQT; ADWSWAQ; ADWSWAQT; TALDFSWLQTE; LDFSWLQTE; TALDFSWL; ALDFSWLQTE; LDFSWLQTE; LDFSWL; TALDFSWLQT; TALDFSWLQ; ALDFSWLQT; LDFSWLQ; LDFSWLQT; TALDYSWLQTE; LDYSWLQTE; TALDYSWL; ALDYSWLQTE; LDYSWLQTE; LDYSWL; TALDYSWLQT; TALDYSWLQ; ALDYSWLQT; LDYSWLQ; LDYSWLQT; TALDWAWLQTE; LDWAWLQTE; TALDWAWL; ALDWAWLQTE; LDWAWLQTE; LDWAWL; TALDWAWLQT; TALDWAWLQ; ALDWAWLQT; LDWAWLQ; LDWAWLQT; TALDWEWLQTE; LDWEWLQTE; TALDWEWL; ALDWEWLQTE; LDWEWLQTE; LDWEWL; TALDWEWLQT; TALDWEWLQ; ALDWEWLQT; LDWEWLQ; and LDWEWLQT.

7. The anti-inflammatory compound of claim 1, wherein X_a consists of 6-12 amino acid residues.

8. The anti-inflammatory compound of claim 1, wherein X_a consists of 6-10 amino acid residues.

9. The anti-inflammatory compound of claim 1, wherein X_a comprises at least five basic amino acid residues.

10. The anti-inflammatory compound of claim 1, wherein X_a comprises at least five amino acid residues independently selected from L-arginine, D-arginine, L-lysine and D-lysine.

11. The anti-inflammatory compound of claim 1, wherein X_a is selected from the group consisting of RRMKWKK; YGRKKRRQRRR; ygrkkrrqrrr; YARKARRQARR; yarkarrqarr; YARAARRAARR; yaraarraarr; rrmkwkk, RRRRRR, RRRRRRR, RRRRRRRR, RRRRRRRRR, RRRRRRRRRR, RRRRRRRRRRR, . rrrrrr, rrrrrrr, rrrrrrrr, rrrrrrrrr, rrrrrrrrrr, and rrrrrrrrrrr.

12. An anti-inflammatory compound comprising an amino acid sequence selected from the group consisting of: RRMKWKKTALDWSWLQTE;

rrmkwkkTALDWSWLQTE; YGRKKRRQRRRTALDWSWLQTE;
ygrkkrrqrrrTALDWSWLQTE; rrrrrrrTALDWSWLQTE;
RRRRRRRTALDWSWLQTE; YARKARRQARRTALDWSWLQTE;
yarkarrqarrTALDWSWLQTE YARAARRAARRTALDWSWLQTE;
yaraarraarrTALDWSWLQTE YGRKKRRQRRRLDWSWL; ygrkkrrqrrrLDWSWL;
RRMKWKKLDWSWL; rrmkwkkLDWSWL; rrrrrrrLDWSWL;
YARAARRAARRLDWSWL; yaraarraarrLDWSWL; and RRRRRRRLDWSWL.

13. An anti-inflammatory compound having a structure selected from the group consisting of:

H-RRMKWKKTALDWSWLQTE-NH_2;
H-YGRKKRRQRRRTALDWSWLQTE-NH_2;
H-rrrrrrrTALDWSWLQTE-NH_2;
H-YARKARRQARRTALDWSWLQTE-NH_2;
H-YARAARRAARRTALDWSWLQTE-NH_2;
H-RRMKWKKLDWSWL-NH_2;
H-rrmkwkkLDWSWL-NH_2;
H-rrrrrrrLDWSWL-NH_2;
H-YARAARRAARRLDWSWL-NH_2;
H-yaraarraarrLDWSWL-NH_2; and
H-YGRKKRRQRRRLDWSWL- NH_2.